

2521.000176.3

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
	:	Examiner: NYA
Peter S. Dragovich, et al.)	
	:	Group Art Unit: 1621
Application No.: Div. of 09/947,381)	
	:	
Filed: herewith)	
	:	
For: ANTIPICORNAVIRAL)	
COMPOUNDS,	:	
COMPOSITIONS CONTAINING)	
THEM, AND METHODS FOR	:	
THEIR USE)	July 29, 2003

Assistant Commissioner for Patents
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT


Sir:

Pursuant to 37 C.F.R. § 1.56 and 37 C.F.R. §§ 1.97 and 1.98,
Applicants respectfully direct the Examiner's attention to the documents listed on the
enclosed Form PTO-1449. The listed references were cited in prior parent Application No.
09/421,560. Accordingly, no copies of the listed documents are enclosed pursuant to 37
CFR § 1.98(d).

It is respectfully requested that the above information be considered by
the Examiner and that a copy of the enclosed Form PTO-1449 be returned bearing the
Examiner's initials to indicate that this information has been considered.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



Attorney for Applicants
Raymond R. Mandra
Registration No. 34,382

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

FORM PTO 1449 (modified) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)				ATTY DOCKET NO 2521.000176.3		APPLICATION NO. Div. of 09/947,381	
				APPLICANT Peter S. Dragovich, et al.			
				FILING DATE		GROUP 1621	
U.S. PATENT DOCUMENTS							
*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		5,344,957	09/06/94	Bovy et al.	560	35	
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
		632,051	01/04/95	Europe			
		WO92/22570	12/23/92	WIPO			
		WO95/23222	08/31/95	WIPO			
		WO95/31433	11/23/95	WIPO			
		EP 0 201 844	11/20/86	Europe			
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)							
		Hanzlik et al., "Vinylogous Amino Acid Esters: A New Class of Inactivators for Thio Proteases," <i>J. Med. Chem.</i> , Vol. 27, No. 6, June 1984. 711-712.					
		Thompson et al., "Carboxyl-Modified Amino Acids and Peptides as Protase Inhibitors," <i>J. Med. Chem.</i> , Vol. 29, No. 1, 1986, pp. 104-111.					
		Liu et al., "Structure-Activity Relationships for Inhibition of Papain by Peptide Michael Acceptors," <i>J. Med. Chem.</i> , Vol. 35, 1992, pp. 1067-1075.					
		White et al., <i>Principles of Biochemistry</i> , 6 th Ed., McGraw Hill, 1978, pp. 893-895.					
		Callahan et al., "Molecular cloning and complete sequence determination of RNA genome of human rhinovirus type 14," <i>Proc. Natl. Acad. Sci. USA</i> , Vol. 82, February 1985, pp. 732-736.					
		Olson et al., "Structure of a human rhinovirus complexed with its receptor molecule," <i>Proc. Natl. Acad. Sci. USA</i> , Vol. 90, January 1993, pp. 507-511.					
		Hammerie et al., "Site-directed Mutagenesis of the Putative Catalytic Triad of Poliovirus 3C Proteinase," <i>J. Biol. Chem.</i> , Vol. 266, No. 9, 1991, pp. 5412-5416.					
		Orr et al., "Hydrolysis of a Series of Synthetic Peptide Substrates by the Human Rhinovirus 14 3C Proteinase, Cloned and Expressed in <i>Escherichia coli</i> ," <i>J. Gen Virol</i> , Vol. 70, 1989, pp. 2931-2942.					
		Leong et al., "Human Rhinovirus-14 Protease 3C(3C ^{Pro}) Binds specifically to the 5'-Noncoding Region of the Viral RNA," <i>J. Biol. Chem.</i> , Vol 268, 1993, pp. 25735-25739.					
		<i>Comprehensive Medicinal Chem.</i> , Vol 2, C. Hansch, Eds., Pergamon Press, Oxford, 1990, pp. 431-433, 440-441.					
EXAMINER				DATE CONSIDERED			

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U.S. PATENT DOCUMENTS		
		Shaw, "Cysteinyl Proteinases and Their Selective Inactivation," <i>Advance Enz</i> , Vol. 63, 1990, pp. 271,347.
		Matthews et al., "Structure of Human Rhinovirus 3C Protease Reveals a Trypsin-like Polypeptide Fold, RNA-Binding Site, and Means for Cleaving Precursor Polyprotein," <i>Cell</i> , Vol. 77, June 1994, pp. 761-771
		Allaire et al., "Picornaviral 3C cysteine proteinases have a fold similar to chymotrypsin-like serine proteinases," <i>Nature</i> , Vol. 369, May 1994, pp. 72-76.
		Bazan et al., "Viral cysteine proteases are homologous to the trypsin-like family of serine proteases: Structural and functional implications," <i>Proc. Natl. Acad. Sci. USA</i> , Vol. 85, November 1988, pp. 7872-7876.
		Cordingley et al., "Cleavage of Small Peptides <i>In Vitro</i> by Human Rhinovirus 14 3C Protease Expressed in <i>Escherichia coli</i> ," <i>Journal of Virology</i> , Vol. 63, No. 12, December 1989, pp. 5037-5045.
		Kaldor et al., "Glutamine-Derived Aldehydes for the Inhibition of Human Rhinovirus 3C Protease," <i>Bioorganic & Medicinal Chemistry Letters</i> , Vol. 5, No. 17, 1995, pp. 2021-2026.
		Malcolm et al., "Peptide Aldehyde Inhibitors of Hepatitis A Virus 3C Proteinase," <i>Biochemistry</i> , Vol. 34, 1995, pp. 8172-8179.
		Skiles et al., "Spiro Indolinone Beta-Lactams, Inhibitors of Poliovirus and Rhinovirus 3C-Proteinases," <i>Tetrahedron Letters</i> , Vol. 31, No. 50, 1990, pp. 7277-7280.
		Singh et al., "Structure and Stereochemistry of Thysanone: A Novel Human Rhinovirus 3C-Protease Inhibitor from <i>Thysanophora penicilloides</i> ," <i>Tetrahedron Letters</i> , Vol. 32, No. 39, 1991, pp. 5279-5282.
		Kadam et al., "Citrinin Hydrate and Radicinin: Human Rhinovirus 3C-Protease Inhibitors Discovered in a Target-Directed Microbial Screen," <i>The Journal of Antibiotics</i> , Vol. 47, No. 7, July 1994, pp. 836-839.
		Palmer et al., "Vinyl Sulfones as Mechanism-Based Cysteine Protease Inhibitors," <i>J. Med. Chem.</i> , Vol. 38, 1995, pp. 3913-3196.
		Maryanoff et al., "Molecular basis for the inhibition of human α -thrombin by the macrocyclic peptide cyclotheonamide A," <i>Proc. Natl. Acad. Sci. USA</i> , Vol. 90, September 1993, pp. 8048-8052.
		Rich et al., "Synthesis of Analogues of the Carboxyl Protease Inhibitor Pepstatin. Effect of Structure on Inhibition of Pepsin and Renin," <i>J. Med. Chem.</i> , Vol. 23, 1980, pp. 27-33.
		Hagihara et al., "Reassignment of Stereochemistry and Total Synthesis of the Thrombin Inhibitor Cyclotheonamide B," <i>J. Am. Chem. Soc.</i> , Vol. 114, 1992, pp. 6570-6571.
		Haberson et al., "Inhibition of Aminopeptidases by Peptides Containing Ketomethylene and Hydroxyethylene Amide Bond Replacements," <i>J. Med. Chem.</i> , Vol. 32, 1989, pp. 1378-1392.
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		Barton et al., "Synthesis of Novel α -Amino-Acids and Derivatives Using Radical Chemistry: Synthesis of L-and D- α -Amino-Adipic Acids, L- α -Aminopimelic Acid and Appropriate Unsaturated Derivatives," <i>Tetrahedron</i> , Vol. 43, No. 19, 1987, pp. 4297-4308.	
		Smith et al., "Synthesis and Renin Inhibitory Activity of Angiotensinogen Analogues Having Dehydrostatine, Leu Ψ [CH ₂ S]Val, or Leu Ψ [CH ₂ SO]Val at the P ₁ -P ₁ ' Cleavage Site," <i>J. Med. Chem.</i> , Vol. 31, 1988, pp. 1377-1382.	
		Meng et al., "Synthetic Approaches toward Glidobamine, the Core Structure of the Glidobactin Antibiotics," <i>Tetrahedron</i> , Vol. 47, No. 32, 1991, pp. 6251-6264.	
		Kolter et al., "Configuratively Stable Dipeptide Aldehydes from D-Glucosamine Hydrochloride," <i>Angew. Chem. Int. Ed. Engl.</i> , Vol. 31, No. 10, 1992, pp. 1391-1392.	
		Reetz et al., "Stereoselective Nucleophilic Addition Reactions of Reactive Pseudopeptides," <i>Angew. Chem. Int. Ed. Engl.</i> , Vol. 31, No. 12, 1992, pp. 1626-1629.	
		Aoyagi et al., "Structures and Activities of Protease Inhibitors of Microbial Origin," Institute of Microbial Chemistry, Tokyo, Japan, 1975, pp. 429-454.	
		Rich, "Inhibitors of cysteine proteinases," <i>Proteinase Inhibitors</i> , Barrett and Salvesen (eds.), Elsevier Science Publishers BV, 1986, pp. 154-178.	
		Herold et al., "A Versatile and Stereocontrolled Synthesis of Hydroxyethylene Dipeptide Isosteres," <i>J. Org. Chem.</i> , Vol. 54 (1989), pp. 1178-1185.	
		Bradbury et al., "An Efficient Synthesis of the γ -Lactone Corresponding to a Hydroxyethylene Dipeptide Isostere Using Stereoselective Bromolactonisation of a Chiral Acyloxazolidinone," <i>Tetrahedron Letters</i> , Vol. 30, No. 29 (1989), pp. 3845-3848.	
		Bradbury et al., "1,2,4-Triazolo[4,3-a]pyrazine Derivatives with Human Renin Inhibitory Activity," <i>J. Med. Chem.</i> , Vol. 33 (1990), pp. 2335-2342.	
		Wuts et al., "Synthesis of the Hydroxyethylene Isostere of Leu-Val," <i>J. Org. Chem.</i> , Vol. 57 (1992), pp. 6696-6700.	
		Jones et al., "A Short Stereocontrolled Synthesis of Hydroxyethylene Dipeptide Isosteres," <i>J. Org. Chem.</i> , Vol. 58 (1993), pp. 2286-2290.	
		Pégorier et al., "A General Stereocontrolled Synthesis of Hydroxyethylene Dipeptide Isosteres," <i>Tetrahedron Letters</i> , Vol. 36, No. 16 (1995), pp. 2753-2756.	
		Dondoni et al. "Thiazole-Based Stereoselective Routes to Leucine and Phenylalanine Hydroxyethylene Dipeptide Isostere Inhibitors of Renin and HIV-1 Aspartic Protease," <i>J. Org. Chem.</i> , Vol. 60 (1995), pp. 7927-7933.	
		Weislow et al., "New Soluble-Formazan Assay for HIV-1 Cytopathic Effects: Application to High-Flux Screening of Synthetic and Natural Products for AIDS-Antiviral Activity," <i>Journal of the National Cancer Institute</i> , Vol. 81, No. 8 (1989), pp. 577-586.	
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		L.A. Carpino, "1-Hydroxy-7-Azabenzotriazole. An Efficient Peptide Coupling Additive," <i>Journal of the American Chemical Society</i> , Vol. 115, No. 10 (1993), pp. 4397-4398.	
		J.E. Baldwin, et al., "An Intramolecular Cobalt Cyclisation for the Construction of Substituted Pyrrolidines," <i>Tetrahedron</i> , Vol. 48, No. 42 (1992), pp. 9373-9384.	
		J.J. Willard, et al., "New Method of Removing Xanthate Groups from Carbohydrates. Chemical Structure of Methyl α -D-Glucopyranoside Monoxanthate," <i>Journal of the American Chemical Society</i> , Vol. 82, No. 16 (1960), pp. 4347-4350.	
		R.M. Freidinger, et al., "Synthesis of 9-Fluorenylmethoxycarbonyl-Protected N-Alkyl Amino Acids by Reduction of Oxazolidinones," <i>Journal of Organic Chemistry</i> , Vol. 48, No. 4 (1983), pp. 77-81.	
		D.A. Niederer, et al., "Amination with N-Benzyloxycarbonyl-3-Phenyloxaziridine as a Route to Sensitive Chiral α -Hydrazino Acids: Synthesis of L-Hydrazino Serine," <i>Tetrahedron Letters</i> , Vol. 34, No. 43 (1993), pp. 6859-6862.	
		C.A. Veale, et al., "Nonpeptidic Inhibitors of Human Leukocyte Elastase. 5. Design, Synthesis, and X-ray Crystallography of a Series of Orally Active 5-Aminopyrimidin-6-one-Containing Trifluoromethyl Ketones," <i>Journal of Medicinal Chemistry</i> , Vol. 38, No. 1 (1995), pp. 98-108.	
		R.V. Hoffman, et al., "A Simple, Stereoselective Synthesis of Ketomethylene Dipeptide Isosteres," <i>Tetrahedron</i> , Vol. 53, No. 21 (1997), pp. 7119-7126.	
		D. Askin, et al., "Highly Diastereoselective Alkylations of Chiral Amide Enolates: New Routes to Hydroxyethylene Dipeptide Isostere Inhibitors of HIV-1 Protease," <i>Journal of Organic Chemistry</i> , Vol. 57, No. 10(1992), pp. 2771-2773.	
		J.C. McWilliams, et al., "Tandem Asymmetric Transformations: An Asymmetric 1,2-Migration from a Higher Order Zincate Coupled with a Stereoselective Homoaldol Reaction," <i>Journal of the American Chemical Society</i> , Vol. 118, No. 47 (1996), pp. 11970-11971.	
		J.R. Luly, et al., "A Synthesis of Protected Aminoalkyl Epoxides from α -Amino Acids," <i>Journal of Organic Chemistry</i> , Vol. 52, No. 8 (1987), pp. 1487-1492.	
		March, <i>Advanced Organic Chemistry</i> , Fourth Edition, John Wiley & Sons, Inc. (New York), 1992, pp. 205, 351-356, 642-643, 652-653, 666, 501, 520-521, 569, 579-580, 992-994, 999-1000, 1005, and 1008.	
		H. Ikuta, et al., "Synthesis and Antiinflammatory Activities of 3-(3,5-Di-tert-butyl-4-hydroxybenzylidene)pyrrolidin-2-ones," <i>Journal of Medicinal Chemistry</i> , Vol. 30, No. 11 (1987), pp. 1995-1998.	
		Shcherbina, et al., Chemical Abstract No. 68:69376 (1968).	
		Venkatramaam, et al., "Synthesis of Potential Inhibitors for Human Rhinovirus 3 C Protease," <i>The Second Winter Conference on Medicinal and Bioorganic Chemistry</i> , Steamboat Springs, Colorado, January 26-31, 1997.	
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		Hellen, et al., "Proteolytic Processing of Polyproteins in the Replication of RNA Viruses," <i>Biochemistry</i> , Vol. 28, No. 26 (1989), pp. 9881-9890.	
		Matthews, et al., "Structure of Human Rhinovirus 3C Protease Reveals a Trypsin-like Polypeptide Fold, RNA-Binding Site, and Means for Cleaving Precursor Polyprotein," <i>Cell</i> , Vol. 77, No. 5 (1994), pp. 761-771.	
		Cordingley, et al., "Substrate Requirements of Human Rhinovirus 3C Protease for Peptide Cleavage <i>in Vitro</i> ," <i>The Journal of Biological Chemistry</i> , Vol. 265, No. 16 (1990), pp. 9062-9065.	
		Wellink, et al., "Proteases Involved in the Processing of Viral Polyproteins," <i>Archives of Virology</i> , Vol. 98 (1988), pp. 1-26.	
		P. Wipf et al., "S _N 2'-Reactions of Peptide Aziridines. A Cuprate-Based Approach to (E)-Alkene Isosteres", <i>Journal of Organic Chemistry</i> , Vol. 59, No. 17, August 26, 1994, pp. 4875-4886.	
		N. Moss et al., "Peptidomimetic Inhibitors of Herpes Simplex Virus Ribonucleotide Reductase with Improved <i>in Vivo</i> Antiviral Activity", <i>Journal of Medicinal Chemistry</i> , Vol. 39, 1996, pp. 4173-4180.	
		J. Vagner et al., "Solid-phase Organic Synthesis: Creation of Carbon-carbon Double Bonds Under Mild Conditions By Wittig-type Reactions. <i>Collect. Czech. Chem. Commun.</i> Vol. 61, 1996, pages 1697-1702.	
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